

### Abstract

Described are novel means and methods for the preparation and activation of nucleoside and nucleotide based drugs. In particular, a method for the production of a polypeptide having or having enhanced kinase activity for a nucleoside or nucleotide analog is provided and polypeptides obtainable by said method. Described are also polynucleotides and vectors encoding said polypeptide obtainable by the method of the invention as well as to host cells transformed therewith. Furthermore, antibodies against said polypeptide are provided and pharmaceutical and diagnostic compositions as well as kits comprising proteins having kinase activity for a nucleoside or nucleotide analog or their encoding polynucleotides or vectors. Furthermore, the use of the before described proteins, polypeptides, polynucleotides, vectors and antibodies is provided for the preparation of pharmaceutical compositions for treating, preventing and/or delaying a disease related to viral infection or cancer. In addition, a method for identifying inhibitors of nucleoside or nucleotide kinases is described and methods for identifying nucleoside or nucleotide based prodrugs employing the above mentioned polypeptides, polynucleotides, vectors and host cells. Also provided are compounds identifiable by said methods as well as pharmaceutical and diagnostic compositions comprising said inhibitors. Moreover, the use of proteins and polypeptides having nucleoside or nucleotide kinase activity or their encoding polynucleotides or vectors is described for the preparation of nucleoside or nucleotide phosphates or analogs and derivatives thereof.